



Editorial

The effects of diabetes share care program in southern Taiwan

Type 2 diabetes is a growing global pandemic and its alarming increase in prevalence raises significant concerns. The age-standardized prevalence of Type 2 diabetes was 6.5% for men and 6.6% for women and is afflicted 1,524,851 people by the end of 2005 in Taiwan.¹ Diabetes and its complications are known to place a tremendous burden on society and on the cost of health care. A number of single risk factor intervention trials targeting hyperglycemic, dyslipidemia, and hypertension have shown major beneficial effects on long-term outcomes. The Steno-2 study showed that intensive multifactorial intervention for an average 7.8 years cut cardiovascular events, nephropathy, and retinopathy by about 50% when compared with conventional treatment.² A subsequent analysis of those factors that could be responsible for the dramatic reduction in cardiovascular events in the Steno-2 study by the United Kingdom Prospective Diabetes Study risk engine showed that reduction in total cholesterol had the major impact of the overall benefit followed by blood pressure lowering and glycemic control.³ American Diabetes Association (ADA) also suggested that diabetic people needs multifactorial treatment and recommended that glycemic, blood pressure, and cholesterol targets must be A1C less than 7.0%, blood pressure less than 130/80 mmHg, and low-density lipoprotein (LDL) cholesterol less than 100 mg/dL, respectively.⁴

Health education is an essential element of diabetes care and ADA recommended that people with diabetes should receive diabetes self-management education according to the national standard.⁴ Taiwan Diabetes Shared Care Program (DSCP) was initiated by Bureau of Health Promotion and supported by Bureau of National Health Insurance, which is a national standard in Taiwan since 2003. In this issue of the Journal of the Chinese Medical Association, Dr Hao et al. evaluate the metabolic outcomes of DSCP for Type 2 diabetic patients in southern Taiwan.⁵ All participants recruited in DSCP were introduced to self-care, nutrition, and other health issues by certified diabetes nurses and dietitians at the beginning of the program. Patients were routinely monitored by taking fasting blood glucose, A1C, lipid profiles, serum creatinine, urine protein, and eye fundi examinations. Based on these measurements, physicians, nurses, and dietitians would reinforce the aims of the education program for every 3 months. However, this is a study without controls and the sample size is too small to conclude the promotion of the system to every patient with Type 2 diabetes. Their data revealed that the percentage of patients recruited in

the DSCP program achieving glycemic target increased from 25.8% to 32.3%, blood pressure target increased from 41.9% to 58.1%, and LDL cholesterol target increased from 31.5% to 58.1% after 3-year intervention. They also found that the proportion of patients reached all the three treatment goals increased from 4.03% at baseline to 4.84% and 8.87% after 1-year and 3-year DSCPs, respectively. Their data revealed that the improvement in control of hyperglycemia, blood pressure, and hypercholesterolemia after completion of 1- and 3-year interventions is low. They concluded that DSCP is suggestive to patients with low diabetes duration; high baseline A1C, blood pressure, and LDL cholesterol; and low baseline high-density lipoprotein cholesterol.

It is clear that optimal diabetes management requires an organized, systematic approach and involvement of a coordinated team of dedicated health care professionals working in an environment where patient-centered high-quality care is the priority.⁴ Diabetes self-management education is the ongoing process of facilitating the knowledge, skill, and ability necessary for diabetes self-care, which is a critical element of care for all patients with diabetes and is necessary to improve patient outcomes.⁶ Non-compliance with instructions for taking medications and non-adherence to suggestions about lifestyle changes have been shown to counter any positive pharmacologic effects. These problems can be addressed by a comprehensive diabetic education program. Diabetes education is effective for improving clinical outcomes and quality of life, but it is difficult to define the quality of diabetes education and to provide evidence-based education. The American Association of Diabetes Educators Outcome Standards for Diabetes Education specify self-management behavior as the key outcome, in which knowledge can be translated into self-management behavior.⁷ Effective diabetes education is one contributor to longer-term, higher-order outcomes such as clinical status (e.g. Control of glycemia, blood pressure, and cholesterol), health status (e.g. Avoidance of diabetes complications), and subjective quality of life.⁷ Many studies have found that diabetes self-management education is associated with improved diabetes knowledge and improved self-care behavior, lower A1C, lower body weight, improved quality of life, and lower costs.⁴ This has been accompanied by improvements in lipid and blood pressure control and led to substantial reduction in end-stage microvascular complications in those with diabetes.⁴ Some

studies revealed no beneficial effect of these outcomes; however, more unpublished data might reveal more disappointing results. Thank to Dr. Hao and his colleagues who frankly presented their results of DSCP and also discussed the weak point of this program in their hospitals.⁵ They concluded that the improvement in control of hyperglycemia, blood pressure, and hypercholesterolemia after completion of 1- and 3-year interventions is low.

There has been steady improvement in the proportion of diabetic patients achieving recommended levels of A1C, blood pressure, and cholesterol in the last 10 years. Mean A1C has declined from 7.82% in 1999–2000 to 7.18% in 2003–2004 based on National Health and Nutrition Examination Survey data in United States.⁸ They concluded that this trend may represent an important improvement in diabetes care and is encouraging for future education of diabetes-related complications. However, mean A1C has no significant difference from 8.1% in 1999 to 7.9% in 2006 based on national surveys in Taiwan.^{9,10} The percentage of subjects who met the ADA recommended goals was 57.1% that achieved A1C level less than 7.0%, 45.5% had blood pressure less than 130/80 mmHg, and 46.5% had LDL cholesterol less than 100 mg/dL, with 12.2% of people achieving all the three treatment goals in 2003–2006 NHANES.¹¹ Yu et al. undertook nationwide surveys to evaluate the status of diabetes control in 7,541 diabetic subjects among 114 accredited Diabetes Health Promotion Center in Taiwan in 2006.¹⁰ There were 32.4% of Type 2 diabetic patients who achieved an A1C of <7.0%, 30.9% had a blood pressure <130/80 mmHg, and 35.3% had a LDL cholesterol <100 mg/dL, whereas only 4.1% of patients with diabetes achieving all three treatment goal in 2006 from Taiwan nationwide survey.¹⁰

From the NHANES data, there was a significant improvement in the proportion of people with diabetes achieving the ADA recommended targets,¹¹ but the Taiwan nationwide survey revealed that only a small fraction of diabetic subjects have reached the guideline goals.¹⁰ Although the proportion of patients achieving these therapeutic goals was also low in this small study from local hospital, the target rate was significantly increased from 4.03% to 8.87% after 3-year intervention.⁵ In my view, if we could pay more attention to characteristics that help in attainment of glycemic, blood pressure, and cholesterol control, we may improve diabetes outcomes and diminish the future health care burden from various diabetes complications.

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